



Issues of Charm Measurements

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Importance of Charm

- **Signature of a QGP**

May see N_{charm} increase by ≥ 2 above ε_c

- **Secondary charm production sensitive to thermalization time**

$$\text{Rate} \propto \langle \sigma_c \rangle / \langle \sigma_{\text{tot}} \rangle$$

$$\langle \sigma_{\text{tot}} \rangle^{-1} \propto \tau_{\text{th}}$$

- **It's there**

Open charm could be copious in the 2—4 GeV/c² M_{\parallel} region of dilepton spectrum

QCD prediction of $\sigma(pp \rightarrow cc)$ of 150 — 200 μb at RHIC

Recent work by PHENIX

- **Study of μe for the CDR**
- **Akiba's Study of Electrons presented at THINC**
- **Spin upgrade proposal**

Shows inclusive muon spectrum

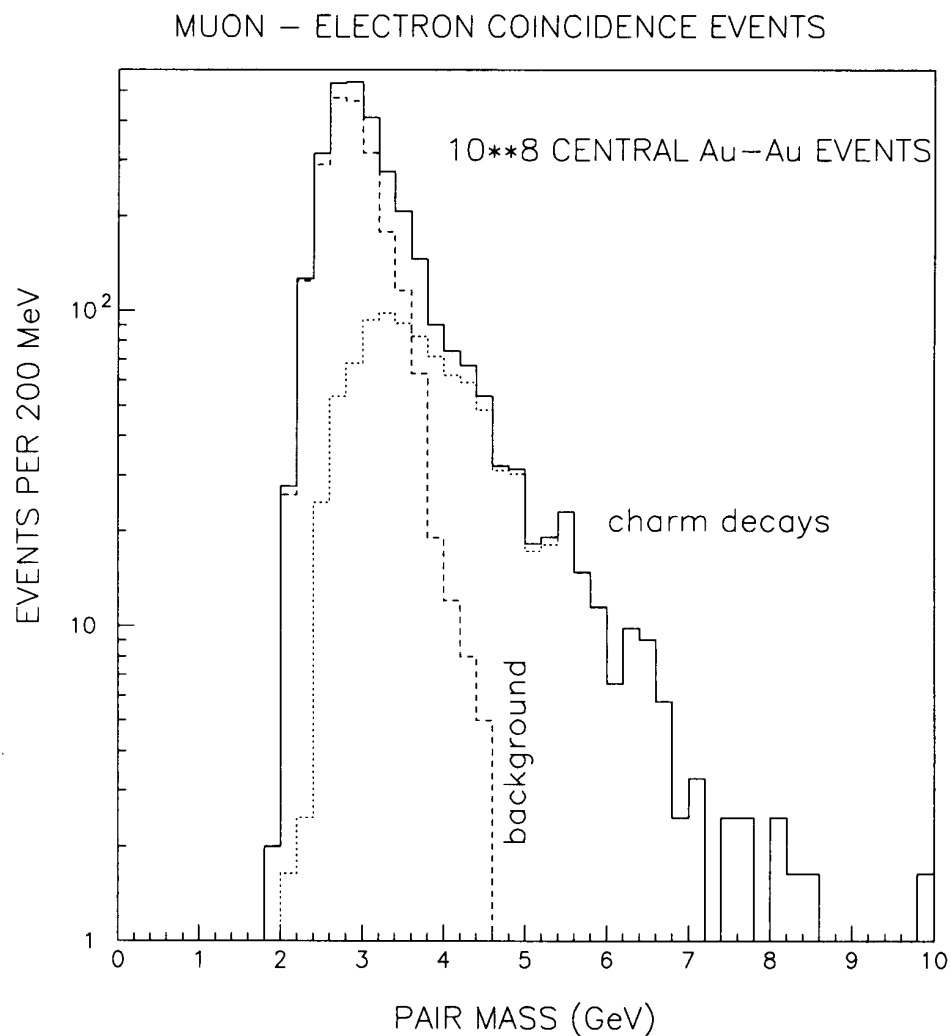
Charm dominates for $p_T > 2.2 \text{ GeV}/c$

Study of μe for the CDR

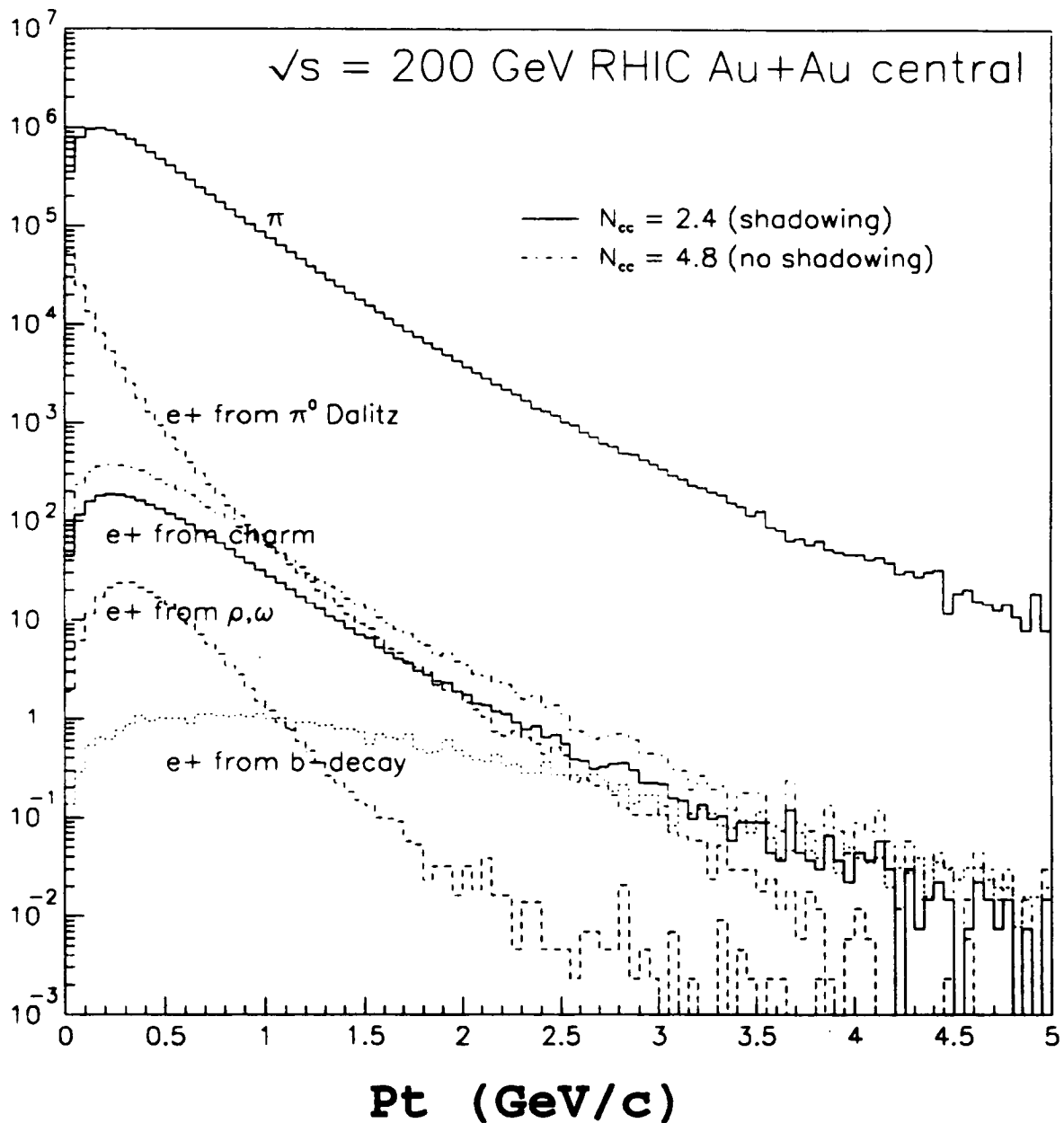
Dalitz cut applied

$$\phi_{\mu e} > 90^\circ$$

$$\theta_\mu > 25^\circ$$



Akiba's Study of Electrons presented at THINC



Suggestions for Future Studies

- **ee, $\mu\mu$, μe calculations done in PISA including K-decays**
- **Look at different event generators for different cross sections**
- **Look at results for pp , pA , AA , dd , and dA**
- **Study for different \sqrt{s}**
- **Inclusive e and μ spectra from correlated and uncorrelated charm pairs with other lepton detected elsewhere in PHENIX**